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Does fall risk education tailored by motivation increase fall risk identification and fall prevention behaviors in community-dwelling older adults when compared to fall risk education tailored by authenticity?

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AOTA Critically Appraised Papers Series

Evidence Exchange

**A product of the American Occupational Therapy Association's
Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER

FOCUSED QUESTION

Does fall risk education tailored by motivation increase fall risk identification and fall prevention behaviors in community-dwelling older adults when compared to fall risk education tailored by authenticity?

Schepens, S. L., Panzer, V., & Goldberg, A. (2011). Randomized controlled trial comparing tailoring methods of multimedia-based fall prevention education for community-dwelling older adults. *American Journal of Occupational Therapy*, 65(6), 702–709.

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CLINICAL BOTTOM LINE:

The researchers explored whether fall risk education tailored by motivation increases fall risk identification and fall prevention behaviors in community-dwelling older adults when compared to fall risk education tailored by authenticity. The primary investigator utilized the Multimedia Fall Prevention (MFP) system to conduct assessments and interventions with the participants. After initial descriptive data collection, the participants were randomized into the two multimedia groups or the control group. The multimedia groups viewed vignettes tailored to their group placement and then had a single 30-minute education session with the primary investigator. The control group received no education on fall prevention.

The design and delivery of the interventions utilized principles of ecological psychology, adult learner characteristics, and principles of multimedia design. The learning theories suggest that when learning new information, transfer of knowledge to memory is best when it takes place in a situation that is specific to the context in which it occurs. Application of these theories in the intervention groups was successful in increasing identification of fall risks. However, the intervention tailored by motivation significantly increased fall prevention behaviors when compared to both the intervention tailored by authenticity and the control.

The intervention tailored by motivation focused on the use of intrinsically based goals, the participants' quality of life, and utilized content selected by the participants. Selection of educational content was accomplished by having participants choose 4–10 situations from a list of 20 that were most relevant to their lives and about which they would like to learn more.

This study contributes to the body of evidence supporting fall prevention education for older adults. Furthermore, utilization of a multimedia educational system offers occupational

therapists an evidence-based intervention that can be administered within clinical time constraints. Aligned with occupational therapy's holistic approach, the program can be tailored to fit the specific needs of the older adults, resulting in improved fall threats knowledge and engagement in fall prevention behaviors. Clinical implications of the results suggested that utilization of intrinsically based goals is associated with positive gains in learning, performance, and transfer of fall threats identification to behavioral application. In summary, educational interventions on fall prevention tailored by motivation and incorporating them into clinical care, may reduce the number of falls in the older adult.

RESEARCH OBJECTIVE(S)

List study objectives.

To determine whether multimedia fall prevention education using different instructional strategies increases older adults' ability to identify fall risks and implement fall prevention behaviors into their daily activities.

DESIGN TYPE AND LEVEL OF EVIDENCE:

Randomized controlled trial Level I

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *Circle yes or no, and if no, explain.*

YES/NO

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

The participants were recruited for the study by convenience sampling methods through person-to-person solicitation and in response to fliers at senior housing and community facilities. Sixty-eight community-dwelling older adults were assessed for eligibility, and 58 met the inclusion criteria. Participants were randomized to one of the two multimedia intervention groups or to a control group using a block randomization technique.

Inclusion Criteria

The older adults included in the study were community dwelling; ages 65 years or older; English speaking; reported normal or corrected-to-normal vision and hearing; were alert and oriented to person, place, and time; and were able to follow three-step commands.

Exclusion Criteria

Older adults excluded from the study had a diagnosis of a mental disorder or a neurological disease that affected their cognition, a learning disability, history of vertigo, chronic ear infections, or motion sickness.

SAMPLE CHARACTERISTICS

N = 58.

% Dropouts 8.6%

#/ (%) Male 10/(19%)

#/ (%) Female 43/(81%)

Ethnicity NR

Disease/disability diagnosis Participants were community-dwelling older adults at risk for falls.

Check appropriate group:

<20/study group	20–50/study group	51–100/study group	101–149/study group	150–200/study group
✓				

INTERVENTION(S) AND CONTROL GROUPS

Add groups if necessary.

Group 1

Brief Description	Intervention tailored by authenticity was based on situated learning theory. It focused on realism of the content by individualizing vignettes presented to each participant on the basis of his or her lifestyle, as determined by the interview and selected by the primary investigator. The initial interviews took place by telephone and at the first visit for all participants. General medical and fall histories were recorded. Other descriptive information was also collected, such as fear of falling, mobility aid use, and independence in accessing the community. The participants viewed five pairs of vignettes tailored by authenticity. The chosen situations reflected unique participants' characteristics, including living situation, use of a mobility device, and ability to complete activities of daily living (ADLs) independently. The primary investigator and the participants discussed the multimedia content when viewing of the paired vignettes was completed. The investigator then asked the participants to identify fall threats common to the vignettes. Participants were instructed by the primary investigator in how to keep a falls diary during the 1-month between the initial and the follow-up visits.
Setting	At a location of their convenience, either in their home or at the Mobility Research Laboratory at Wayne State University. However, all settings were characterized as a quiet room where headsets were used.
Who Delivered?	Primary investigator (Stacey L. Schepens), an occupational therapist.
Frequency?	A single approximate 30-minute educational session.
Duration?	1 session followed by a follow-up interview 1 month later.

Group 2

Brief Description	Intervention tailored by motivation incorporated three strategies in the intervention: (1) a clear statement of the program goals, (2) an emphasis on the positive aspects of completing the program, and (3) participant selection of content to be addressed during the intervention (p. 704). Interviews took place by telephone and at the first visit for all participants. General medical and fall histories were recorded. Other descriptive information was collected, such as fear of falling, mobility aid use, and independence in accessing the community. Interview information collected from the motivation group was used to tailor the motivational intervention. The primary investigator in collaboration with the individual participants delivered the intervention tailored by motivation. In the tailored by motivation group, the participants chose and viewed 4–10 situations from a list of 20 that they would like to learn more and were most relevant to their lives. When the participant finished viewing the vignettes, the primary investigator and the participant discussed the multimedia content and the learner was asked to identify fall threats common to the vignette. Participants were instructed by the primary investigator in how to keep a falls diary during the 1-month between the initial and the follow-up visits.
Setting	At a location of their convenience, either their home or at the Mobility Research Laboratory at Wayne State University. However, all settings were characterized as a quiet room where headsets were used.
Who Delivered?	Primary investigator (Stacey L. Schepens), an occupational therapist.
Frequency?	A single approximate 30-minute educational session.
Duration?	1 session followed by a follow-up interview 1 month later.

Group 3

Brief Description	The control group received interviews by telephone and at the first visit. General medical and fall histories were recorded. Other descriptive information was collected, such as fear of falling, mobility aid use, and independence in accessing the community. The control group did not receive the single 30-minute education session but were instructed to keep a falls diary for 1-month between the initial and the follow-up visits.
Setting	At a location of their convenience, either their home or at the Mobility Research Laboratory at Wayne State University. However, all settings were characterized as a quiet room.
Who Delivered?	Primary investigator (Stacey L. Schepens), an occupational therapist.
Frequency?	No educational intervention session.
Duration?	1 session followed by a follow-up interview 1 month later.

Intervention Biases: Circle yes or no and explain, if needed.

Contamination

YES/NO	
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Co-intervention

YES/NO	While no co-intervention biases were mentioned in the study, there may have been “unaccounted for” fall risk education between the single 30-minute session and the 1-month follow-up.
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Timing

YES/NO	
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Site

YES/NO	Some of the participants received the intervention at their own home. This might create bias, since those participants may be able to readily identify immediate fall threats at home and implement fall prevention behavior than those being seen at the Mobility Research Laboratory at Wayne State University.
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Use of different therapists to provide intervention

YES/NO	The primary investigator, Stacey L. Schepens, conducted all intervention procedures.
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MEASURES AND OUTCOMES

Complete for each relevant measure when answering the evidence-based question:

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article--yes/no/NR [not reported]), and how frequently the measure was used.

Knowledge of fall threats

All participants were pretested at the initial visit and posttested approximately 1 month later by the primary investigator to assess fall threats knowledge. Pretest and posttest assessments were accomplished using the assessment component of the Multimedia Fall Prevention program. Each participant was asked to verbally identify fall threats from watching 10 randomly presented standardized clips. Reliability and validity were NR [not reported].
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Fall Diary

Participants were instructed to utilize a fall diary that logged losses of balance and falls, circumstances surrounding these occurrences, new fall prevention behaviors implemented, and any medical issues between the initial and the follow-up visits a month later. Reliability and validity were NR [not reported].

Measurement Biases

Were the evaluators blind to treatment status? *Circle yes or no, and if no, explain.*

YES/NO	All interviews, assessments and interventions were completed by the primary investigator, Stacey L. Schepens.
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Recall or memory bias. *Circle yes or no, and if yes, explain.*

<input checked="" type="radio"/> YES/ <input type="radio"/> NO	The falls diaries were self-report measures, which present a potential for recall biases. There might also be a memory bias as the participants were asked to identify fall threats in the same 10 video clips in pretest/posttest, which were only a month apart.
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Others (list and explain):

NA

RESULTS

List results of outcomes relevant to answering the focused question.

Include statistical significance where appropriate ($p < 0.05$).

Include effect size, if reported.

The number of fall threats identified at posttest were significantly greater than the number identified at pretest for both the authenticity group (posttest, $M \pm SEM = 21.7 \pm 1.7$; pretest, $M \pm SEM = 17.1 \pm 1.1$, $p = .004$) and the motivation group (posttest, $M \pm SEM = 23.0 \pm 1.5$; pretest, $M \pm SEM = 16.6 \pm 2.3$, $p = .002$) but not for the control group (posttest, $M \pm SEM = 15.7 \pm 1.4$; pretest, $M \pm SEM = 15.6 \pm 2.3$, $p = .96$). The number of fall threats identified at posttest did not significantly differ between the authenticity and motivation groups ($p > .05$). However, the number of new fall prevention behaviors reported by the motivation group ($M \pm SEM = 7.5 \pm 1.0$) was significantly greater than those reported by the authenticity group ($M \pm SEM = 4.3 \pm 0.8$, $p = .05$) and the control group ($M \pm SEM = 2.1 \pm 1.0$, $p = .001$). There was no significant difference in behaviors between the authenticity and control groups ($p = .27$). Overall, 94.3% of the participants in the intervention groups engaged in at least one new fall prevention behavior, 82.9% engaged in at least two new behaviors (authenticity group, 77.8%; motivation group, 88.2%), and >65% of the participants in both intervention groups engaged in at least four or more new behaviors. In contrast, only 53% of the participants in the control group reported at least one new fall prevention behavior.

Was this study adequately powered (large enough to show a difference)? *Circle yes or no, and if no, explain.*

<input checked="" type="radio"/> YES/ <input type="radio"/> NO	
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Were appropriate analytic methods used? *Circle yes or no, and if no, explain.*

<input checked="" type="radio"/> YES/ <input type="radio"/> NO	
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Were statistics appropriately reported (in written or table format)? *Circle yes or no, and if no, explain.*

<input checked="" type="radio"/> YES/ <input type="radio"/> NO	
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CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

In conclusion, this study demonstrated the effectiveness of multimedia fall prevention education to increase fall prevention behaviors. After one month, intervention Group 1, educated with lifestyle vignettes tailored by authenticity on fall risks, demonstrated increased fall prevention behaviors than the control group that received no intervention. However, intervention Group 2 who received motivational-based fall prevention education exhibited more fall prevention behaviors after one month than the control group and intervention Group 1. The overall response to the intervention in this study suggests multimedia fall prevention education tailored by motivation is an effective intervention for increasing fall prevention behaviors. Limitations of the study included an imbalanced ratio of females (81%) to males (19%), the use of self-report measurements, and a small sample size that reduced generalizability. Furthermore, although the researchers utilized randomization, the sample contained an unequal distribution of fallers and non-fallers between the three groups. However, the researchers addressed fall status during the analysis to address this limitation. Future area of research includes having a larger and more diverse study population or a longitudinal study relating the knowledge of fall threats to prevention behaviors. Additionally, measuring the intervention effects and the relationship of these effects on fall incidents would provide useful data for the occupational therapy practice.

This work is based on the evidence-based literature review completed by: Jonathan Alonso, Brittnee Witham, and Cortney McIntosh, OT students, Dominican University of California, and Kitsum Li, OTD, OTR/L, Faculty Advisor, Dominican University of California.

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